

NASA TECH BRIEF



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Large Seals Fabricated from Small Segments Reduce Procurement Lead Time

The problem:

Static seals for certain applications requiring large diameter closures are found to involve long procurement lead time and high cost due to a design requirement that they be fabricated from large nickel alloy sheet stock.

The solution:

Large diameter seals (greater than 25 inches in diameter) are fabricated from narrow strip stock welded in segments to form a complete ring.

How it's done:

TIG (Tungsten inert gas) welding is used to join several segments of nickel alloy strip stock that are cut and rolled to the proper contour. After welding, the rough ring is stress relieved and finish machined.

Notes:

1. One seal, so fabricated, has been subjected to 32 hotfire starts totaling 4519 seconds elapsed time in an application as seal between turbine and heat exchanger in the Saturn F-1 rocket engine.

2. This technique could be used to reduce the cost of critical, large diameter seals in the heating and ventilating industry, petrochemical industry, and marine fabrication industry (large commercial and military craft).
3. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B66-10464

Patent status:

No patent action is contemplated by NASA.

Source: C. M. Daniels and V. D. Hanes
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